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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. |
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09/391,250 09/07/99 TORII

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MMC2/0620

EXAMINER

NGUYEN, C.

ART UNIT

PAPER NUMBER

2811

DATE MAILED:

06/20/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

# Office Action Summary

Application No.

09/391,250

Applicant(s)

TORII et al.

Examiner

CUONG Q NGUYEN

Group Art Unit

2811

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE Three MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

## Status

- ☒ Responsive to communication(s) filed on Election filed on 5-24-01
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- ☒ Claim(s) 1-28 is/are pending in the application.
- Of the above claim(s) 5-6, 12-13, 19-28 is/are withdrawn from consideration.
- ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- ☒ Claim(s) 1-4, 7-11, 14-18 is/are rejected.
- ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- ☐ Claim(s) \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
  - ☐ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been received.
  - ☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_
  - ☐ received in this national stage application from the International Bureau (PCT Rule 1.7.2(a)).

\*Certified copies not received: \_\_\_\_\_

## Attachment(s)

- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 3
- ☒ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Interview Summary, PTO-413
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Other \_\_\_\_\_

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## **DETAILED ACTION**

### ***Election/Restriction***

1. Applicant's election with traverse of species, claims 1-4, 7-11, and 14-18 in Paper No.9 is acknowledged. Applicants argued that first and second embodiment are related to each other and should be consider as one embodiment. Examiner agree with Applicants that the second embodiment can be obvious over the first embodiment, therefore, the limitation including in the first and second embodiment (Fig.1 to Fig.14) have been examining. Applicants argue that the third embodiment is also related to first and second embodiments and "if the search and examination of an entire application can be made without serious burden, the examiner must examine it in the merits, even though it includes claims to distinct or independent invention". In response, as shown in figures, the structure of third embodiment is totally different and not obvious over first and second embodiments. In M.P.E.P. §808.01(a) states that "Where there is no disclosure of relationship between species, they are independent inventions and election of one invention following a requirement for restriction is mandatory even though applicant disagrees with the examiner. There must be a patentable difference between the species as claimed. Since the claims are directed to independent invention, restriction is proper pursuant to 35 U.S.C. 121, and it is not necessary to show a separate status in the art or separate classification."

The requirement is still deemed proper and is therefore made FINAL.

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***Oath/Declaration***

2. The oath/declaration filed on 09/07/99 is acceptable.

***Drawings***

3. The formal drawings filed on 09/07/99 are acceptable.

***Information Disclosure Statement***

4. The Information Disclosure Statement filed on 09/07/99 has been considered.

***Priority***

5. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

***Specification***

6. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

***Claim Rejections - 35 U.S.C. § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 7-11, and 14-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fazan (US 5,478,772) in view of Beach et al. (US 5,416, 042) or

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Onishi et al. (US 5,854,104) or Okudaira et al. (US 5,418,388) or Ramesh (US 5,838,035).

Fazan discloses a semiconductor device comprising: a substrate (7); a transistor formed on the substrate; an interlayer insulating film (40) having an opening formed on the substrate and the transistor; a conductive film (65) formed in the opening; a capacitor including a first electrode (85), a ferroelectric film (90, a PZT or BST, or PLZT layer) on an upper surface of the first electrode and in contact to side surfaces of the first electrode, and a second electrode (16) on the ferroelectric film; a diffusion barrier layer (75, a Ta layer) formed in the opening between the conductive film and the first electrode, wherein the ferroelectric film is not in contact with the barrier diffusion film. See Fazan's Fig.11A.

Fazan does not teach a reaction barrier layer formed between the interlayer insulating film and the ferroelectric film.

It is conventional and also taught by Beach et al., Onishi et al., Okudaira et al. and Ramesh that a reaction barrier layer such as titanium oxide is commonly used to form between the ferroelectric film and the interlayer insulating layer in order to prevent the interaction between the ferroelectric film and the interlayer insulating film (see Beach et al.'s col.2 lines 53-68) and to serve as an adhesion layer between the ferroelectric film and the interlayer insulating film (see Okudaira et al.'s col.9, lines 8-16).

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Therefore, it would have been obvious to one of ordinary skill in the art to incorporate the conventional reaction barrier as taught by Beach et al., Onishi et al., Okudaira et al., and Ramesh into Fazan's device.

### ***Conclusion***

**8. Papers related to this application may be submitted to Technology center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the TC 2800 Fax center located in Crystal Plaza 4, room 4-C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Group 2811 Fax Center number is (703) 308-7722 and 308-7724. The Group 2811 Fax Center is to be used only for papers related to Group 2811 applications.**

**9. Any inquiry concerning this communication or any earlier communication from the Examiner should be directed to CUONG Q NGUYEN whose telephone number is (703) 308-1293. The Examiner is in the Office generally between the hours of 6:30 AM to 5:00 PM (Eastern Standard Time) Monday through Thursday.**

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor TOM THOMAS who can be reached on (703) 308-2772. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-7722 or 308-7724.

Serial Number: 09/391,250

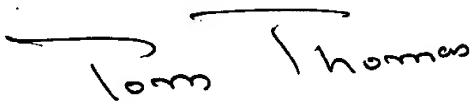
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Any inquiry of a general nature or relating to the status of this application should be directed to the Technology Center Receptionists whose telephone number is 308-0956.

CN

June 11, 2001

  
TOM THOMAS  
SUPERVISORY PATENT EXAMINER